Notes on *Tomares mauretanicus* (Lycaenidae) in Morocco

Tomares mauretanicus is a little known hairstreak, endemic to Africa north of the Atlas mountain ranges. The purpose of this note is to record some observations, made in Morocco during 1981 and 1982, which may be of interest to students of the Theclinae. *T. mauretanicus* occurs throughout Morocco, flying in early spring—February to March in the lowlands, during April at higher levels e.g. near Azrou (Middle Atlas) and Asni (High Atlas). Populations are usually diffuse, but may on occasion reach high densities where the leguminous foodplant abounds. Strict habitat selection was observed near Asni (1200 m); butterflies were seen only in open areas, where the host *Hippocrepis multisilquosum* grows, and not in interspersed areas of young, commercially planted trees. *T. mauretanicus* was never seen to enter even light shade. Population numbers in any area seemed to be related to the density of *H. multisiliquosum*. The closely related congener *T. ballus* (which is normally recorded from different leguminous hosts (Higgins and Riley, 1980; A Field Guide to the Butterflies of Britain and Europe. 4th Ed. Publ. W. Collins Sons & Co., Glasgow) also occurred around Asni during March-April, but at low densities and with a distinct tendency to occur in more shaded sites. No evidence was found for either larval competition or mating interference between the two species.

Male *T. mauretanicus* flew towards and 'investigated' free-flying conspecifics. One successful courtship was observed when a contacted female settled and immediately closed her wings. The male continued to flutter for a few seconds, landed behind the female, and after a few more rapid flutters, initiated copulation. Time elapsed from first contact to the onset of copulation was less than 30 seconds. The position adopted for mating (Fig. 1) is one with the wings of both sexes tightly closed and directed at an angle to those of the partner.

Fig. 1. Copulating pair of *Tomares mauretanicus*. Note oblique slanting of the wings. Female to the right.

Mated female *T. mauretanicus* flew low over the vegetation searching for hosts. On contacting a *Hippocrepis* individual, females spent a considerable time crawling over the surface of the legume, apparently searching for optimal oviposition sites. Detailed studies were made of oviposition choice, and will be presented elsewhere. Notably, females appeared to select small individuals of the host, with few or no mature flowers. Oviposition on immature hosts may anticipate growth of the plant for maturing larvae. Like many other butterflies, females also distributed most eggs on those individual hostplants most isolated from conspecifics. Such egg distributions have been argued to be the outcome of searching patterns, where isolated plants are more frequently encountered by a female (Courtney & Courtney, 1982; The 'edge-effect' in butterfly oviposition: causality in *Anthocharis cardamines* and related species. Ecol. Ent. 7:131-137).

Eggs were distributed predominantly on the buds and young leaves of growing plants. The white eggs appeared to develop a black spot in the central depression as they matured. Unusually for a Hairstreak, the eggs were often laid in small batches, with up to 6 eggs of identical age placed closely together. More isolated plants were found to have bigger egg batches. No effect of plant size on egg batch size was found. Some larvae were found or reared. They have the typical squat hairstreak form, with a greenish ground colour, lateral stripes of yellow and purple and a dorsal stripe of purple within two yellow bands.

Some of the colonies of *T. mauretanicus* found are in non-agricultural areas which are used only sporadically for grazing. By far the majority of populations are associated with agricultural areas, where *H. multisiliquosum* occurs as a casual weed or as an invader of fallow land. Whilst present land practices continue, the future of host and butterfly populations seems secure. However with increasing use of herbicides and pesticides in lowland areas, and persistent overgrazing by pastoral flocks in some upland areas, some decrease in numbers of this attractive and unusual hairstreak is to be expected.

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S. P. Courtney, Dept. of Zoology, P. O. Box 147, University of Liverpool, England

An Effect of the Colony Edge on Gatekeeper Butterflies, *Pyronia tithonus* L. (Satyridae)

How are the boundaries of discrete butterfly colonies maintained? Gatekeeper butterflies, *Pyronia tithonus*, were studied in a herb-rich unimproved pasture in west Dorset, England, in 1980. The site was divided into 20 m by 20 m quadrats. When a butterfly was encountered in a quadrat it was followed for two minutes or until it left that quadrat, whichever was the shorter. The direction taken by butterflies leaving quadrats was noted (i.e., into which of the adjacent quadrats).

One hundred twenty butterflies were followed in 7 quadrats. Males tended to leave quadrats more frequently than females (43/60 males versus 33/60 females; $X^2 = 2.91, 0.05 < p < 0.1$) which may be attributable to their mate searching activities. Both sexes preferentially flew towards the centre of the old meadow when they were